Lesson Summary

The converse of the Pythagorean theorem states that if the side lengths of a triangle, $a, b, c$, satisfy $a^2 + b^2 = c^2$, then the triangle is a right triangle.

If the side lengths of a triangle, $a, b, c$, do not satisfy $a^2 + b^2 = c^2$, then the triangle is not a right triangle.

Problem Set

1. The numbers in the diagram below indicate the units of length of each side of the triangle. Is the triangle shown below a right triangle? Show your work, and answer in a complete sentence.

![Diagram with sides 12, 16, and 20]

2. The numbers in the diagram below indicate the units of length of each side of the triangle. Is the triangle shown below a right triangle? Show your work, and answer in a complete sentence.

![Diagram with sides 47, 24, and 53]

3. The numbers in the diagram below indicate the units of length of each side of the triangle. Is the triangle shown below a right triangle? Show your work, and answer in a complete sentence.

![Diagram with sides 51, 68, and 85]
4. The numbers in the diagram below indicate the units of length of each side of the triangle. Sam said that the following triangle is a right triangle because $9^2 + 32^2 = 40$. Explain to Sam what he did wrong to reach this conclusion and what the correct solution is.

![Diagram](image1.png)

5. The numbers in the diagram below indicate the units of length of each side of the triangle. Is the triangle shown below a right triangle? Show your work, and answer in a complete sentence.

![Diagram](image2.png)

6. Jocelyn said that the triangle below is not a right triangle. Her work is shown below. Explain what she did wrong, and show Jocelyn the correct solution.

![Diagram](image3.png)

We need to check if $27^2 + 45^2 = 36^2$ is a true statement. The left side of the equation is equal to 2,754. The right side of the equation is equal to 1,296. That means $27^2 + 45^2 = 36^2$ is not true, and the triangle shown is not a right triangle.